



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Screening and Brief Interventions Delivery in the Workplace to Reduce Alcohol-Related Harm: a Pilot Randomized Controlled Trial.

Citation for published version:

Holloway, A, Watson, HE, McFadyen, I, Godfrey, C, Stevenson, M & McArthur, K 2015, 'Screening and Brief Interventions Delivery in the Workplace to Reduce Alcohol-Related Harm: a Pilot Randomized Controlled Trial.' *International Journal of Nursing Studies*, vol. 52, no. 1, pp. 39-48. DOI: 10.1016/j.ijnurstu.2014.06.013

Digital Object Identifier (DOI):

[10.1016/j.ijnurstu.2014.06.013](https://doi.org/10.1016/j.ijnurstu.2014.06.013)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

International Journal of Nursing Studies

Publisher Rights Statement:

© Holloway, A., Watson, H. E., McFadyen, I., Godfrey, C., Stevenson, M., & McArthur, K. (2015). Screening and Brief Interventions Delivery in the Workplace to Reduce Alcohol-Related Harm: a Pilot Randomized Controlled Trial. *International Journal of Nursing Studies*, 52(1), 39-48. 10.1016/j.ijnurstu.2014.06.013

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



Abstract

Aims: To explore the feasibility and cost effectiveness of screening and delivery of a brief intervention for hazardous drinking employees.

Methods: A pilot randomised controlled trial of a brief intervention delivered by an Occupational Health nurse versus no delivery of brief intervention (control group) conducted in a Local Authority Council (LCA) in the United Kingdom. Changes in quality of life and economic indicators were measured by the EQ-5D.

Results: 627 employees were screened of whom 163 (26.01%) fulfilled the inclusion criteria with a total of 57 (35%) agreeing to participate. No significant differences were found between the groups for baseline demographics or levels/patterns of alcohol consumption. A statistically significant effect was found in the mean AUDIT scores over time ($F = 8.96$, $p = 0.004$) but not for group ($F = 0.017$, $p = 0.896$), and no significant interaction was found ($F = 0.148$, $p = 0.702$). The cost of each intervention was calculated at £12.48, the difference in service costs was calculated at £344.50 per person; that is there was a net saving of health and other care costs in the intervention group compared to the control group. The QALYs fell in both intervention and control groups, the difference -0.002 $-(-0.010)$ yields a net advantage of the intervention of 0.008 QALYs.

Conclusion: The main results from this pilot study suggest that alcohol brief interventions delivered in the workplace may offer the potential to reduce alcohol-related harm and save public sector resources. A fully powered multi-centre trial is warranted to contribute to the current evidence base and explore further the potential of alcohol brief interventions in the workplace. In a full trial the recruitment method may need to be re-considered.

INTRODUCTION

The most recent findings, based on the General Lifestyle Survey Overview 2010, suggest that 43% and 37% of working men and women respectively in the United Kingdom (UK) consume alcohol at levels that exceed the daily benchmarks (Office for National Statistics [ONS], 2010). The negative impact of hazardous and harmful drinking on health and wellbeing for individuals and at societal level is well documented (World Health Organisation [WHO], 2014) being identified as the second largest risk factor for disease burden in Europe and the leading risk factor in the Americas and the Western Pacific (WHO, 2014). Hazardous drinking has been described as a pattern of drinking where there is an absence of any current disorder but with an increased risk of harmful consequences for the user (Babor et al 2001). Whilst harmful drinking is considered as patterns of consumption that has resulted in the individual already experiencing psychological, physical and social consequences (Babor et al 2001).

In the UK (Bayley et al, 2011, National Institute for Health and Care Excellence (NICE), 2008, Scottish Government, 2008), European Union (Anderson, 2010), Australia (Australian Institute of Health & Welfare, 2010, Collins & Lapsley, 2008), Canada (Rehm et al, 2006), Asia (Thavorncharoensap et al, 2006) and United States of America [USA] (Harwood, 2000) the impact of alcohol consumption on economic efficiency and productivity within the workplace has been identified.

Employed men (73%) and women (62%) are more likely to have drunk alcohol in the previous week than those who are unemployed or economically inactive (ONS, 2010). The cost of alcohol misuse through lost productivity in England was estimated to be £6.4B (Cabinet Office, 2004). In Scotland it was conservatively estimated that over 1 million sick days are lost from the workplace as a result of alcohol dependence (Varney & Guest, 2002). The cost of alcohol misuse to the Scottish taxpayers could be around £3.56 billion per year (Scottish Government Social Research, 2010). Problems that can affect organisations include poor performance at work and reduced productivity, increased staff

turnover and loss of experienced staff, increased accident rates, stress and low morale and damage to an organisation's reputation and image (Alcohol Concern, 2001, 2006, Godfrey, 1997). Most recently the Institute of Alcohol Studies (2013) reported that 77% of employers identified alcohol as a principle threat to the wellbeing of employees, the Science Group of the Alcohol and Health Forum (2011) considered the impact of alcohol on work and productivity, with the British Medical Association (BMA, 2014)

There is increasing focus on prevention to help improve the nation's health and reduce health inequalities (Marmot, 2010). In the USA, Roman & Blum (2002) advocated the considerable potential workplace programmes can have in preventing and reducing alcohol-related problems among employees. The Health Departments for both Scotland and England have highlighted the importance of Occupational Health Services in providing screening and interventions on a range of lifestyle issues (DoH, 2004, Scottish Executive 2003). Access to Occupational Health Services among employers ranges between 15% - 96% across Europe (Pilkington et al, 2002), and are increasingly available to the working population in the United Kingdom (Nicholson, 2002). An evidence based review suggests that workplace interventions have a critical role to play not only in the workplace but also in the health of society (VicHealth, 2012). Within Europe, the European Commission launched the Focus on Alcohol Safe Environment (FASE) project with the aim of building capacity at the European, country, regional and municipal levels to bring together the best practices in work-place strategies to reduce the impact of harmful and hazardous alcohol consumption on the economy (Koeppel, 2010).

The implementation of health promotion in the workplace and achievement of a reduction in hazardous/harmful drinking are key objectives of a range of national and international public health policy documents such as Improving Scotland's Health: the Challenge (Scottish Executive, 2003), Choosing Health (DoH, 2004), Health for All in the 21st Century (WHO, 2006) and Eurocare Recommendations for a future EU Alcohol Strategy (Eurocare European Alcohol Policy Alliance, 2012). Despite this, the Health Development Agency (2004) has suggested that few Occupational Health

Services in the United Kingdom offer lifestyle screening unlike some Scandinavian countries (Aalto et al, 1999, Hermansson et al, 2003) which offer periodic health checks routinely in the workplace. Such activities could provide an opportunity for screening for hazardous/harmful levels and patterns of alcohol consumption. In her review of the health of Britain's working age population, Dame Carol Black identified the major influence that the working environment can have on employees' well-being alongside the key role of Occupational Health (Black, 2008).

There is also convincing evidence of the benefits of generic health professionals providing a brief intervention, in the form of simple advice or brief counselling to patients in primary care for those whose levels and patterns of consumption place them at risk of developing alcohol dependency (Kaner et al, 2007, Moyer et al, 2002). Such interventions have been shown to be cost effective when delivered in this setting (Drummond et al, 2003, Kaner et al, 2009, Ludbrook et al, 2002). Despite nurses being the largest group of health professionals, who often are the first to come into contact with individuals experiencing alcohol-related harm, the evidence does suggest that they are not engaging with this role (Holloway et al, 2013). Lack of education, role legitimacy, lack of clinical confidence and an uneasiness in raising the issue are all identified as barriers (Holloway & Webster, 2013).

The existing evidence on workplace alcohol interventions demonstrates that implementation of Screening and Brief Interventions (SBIs) is feasible and in some cases has the potential to provide beneficial results (Bayley et al, 2011, Hermansson et al, 2010, Richmond et al, 2000). In a systematic review Webb et al (2009) identified only 10 studies of which only four had employed a Randomised Controlled Trial (RCT) design. The small numbers of studies published suffer from various methodological weaknesses in relation to design, interventions and measures employed as well as the variety of workplaces they have been carried out in (Hermansson et al, 2010, Webb et al, 2009).

In this study, we report the results of a study of the feasibility and cost effectiveness of screening employees for hazardous drinking prior to conducting a pilot parallel-group RCT of a brief intervention, delivered by an occupational health nurse.

METHODS

Setting

The study was conducted in a LCA in the United Kingdom which at the time of recruitment employed 7,522 people within four service designations, namely Corporate Services, Educational Services, Social Services, and Property Services.

Sample size

Based on figures from a previous study (Aalto et al, 1999) in which employees were screened by Occupational Health Services to determine eligibility for recruitment to a brief intervention study, 9.4% of the total sample were identified as 'heavy drinkers'. We assumed a consent rate of 75% to the intervention study and estimated that 900 employees would be required to be screened to identify a sample of 63 hazardous drinkers. The number of employees that was ultimately required was 1,514.

Study population and recruitment

Employees' posts were categorised according to the classification used in the 2006 General Household Survey (ONS, 2006) as a), managerial and professional occupations, b), intermediate occupations, and c), routine and manual occupations. Computer generated random numbers were used initially to identify potential participants from a numbered list that gave the occupational categories of the employees. All employees were eligible to participate. The sample was stratified such that the proportions selected for recruitment reflected the profile of the service designation populations of the LCA.

Recruitment proceeded at a lower rate than originally anticipated. From the 900 employees initially screened we were 24 short of the target 63 hazardous drinkers required. As such an additional 300

employees were selected and invited resulting in a further 24 hazardous drinkers identified of which 8 consented to participate in the trial. A different approach to recruitment was then explored in an attempt to reach the target of 63. Following discussion and approval from the Council's Principal Health and Safety Advisor and the Senior Occupational Health Nurse, the research assistant distributed questionnaires in the waiting room whilst employees waited for their Occupational Health appointments. However, this did not prove a cost effective use of the researchers' time within the limits of the study resources, with no patients recruited to the trial. A final 3rd mailing of screening questionnaires followed which yielded 11 more participants recruited to trial.

Those selected for recruitment were given information by letter about the purpose and nature of the study. They were informed that the purpose of this stage of the study was to conduct a general health and lifestyle survey and it informed them that they may be invited to take part in a future stage of the study. A survey questionnaire which incorporated the Alcohol Use Disorders Identification Test (AUDIT) (Babor et al, 2001), instructions for completion and return, and a stamped addressed envelope were enclosed. Those completing and returning the lifestyle survey and identified as consuming alcohol at a hazardous level by the AUDIT were sent a letter of invitation to take part in the study trial. Individuals who responded to the screening questionnaires saying that they would like to stop smoking and/or make improvements to their diet were sent a booklet designed to promote the relevant health behaviour change used by the local NHS Health Promotion Department as well as information on local support agencies. Screened participants who were excluded from the RCT on grounds of harmful drinking as identified by the AUDIT tool were given information regarding appropriate local services, the national Helpline telephone number, and a self-help booklet.

Outcome measures

The primary outcome measures were changes in AUDIT score and reported alcohol consumption at six months follow-up as measured by a seven-day retrospective drinking diary. The data were collected

by means of a self-complete questionnaire that incorporated the AUDIT. Secondary outcomes comprised changes in the quality of life and economic indicators in terms of service use, employment outcomes, public sector resource and employment costs as measured by the EQ-5D. This tool and provides a generic measure of health-related quality of life (Robin and de Charro, 2001). The EQ-5D index can be used to calculate Quality of Life Years (QALYs) from quality of life indices combined with information about gains from an intervention. The use of generic measures, such as the EQ-5D, for economic evaluations is advocated by NICE so that comparisons can be made across different types of interventions (NICE, 2008). The Economic Evaluation was carried out by using a Service User Questionnaire designed to measure: Treatment for drinking problems; Primary and secondary health care use; A range of social care and information services in statutory, private and voluntary sectors; Sources and levels of income; Employment status, sickness absence, work-related accidents, self-assessed alcohol related problems at work and criminal justice service involvement and use. This instrument was originally developed for the United Kingdom Alcohol Treatment Trial (UKATT) (UKATT Research Team, 2005) but was subsequently revised and has been used in both an alcohol randomised controlled trial in primary care (Drummond et al, 2003) in two drug misuse trials (United Kingdom Cognitive Behavioural Therapy in Methadone Maintenance Treatment (UKCBTMM) (UKCBTMM Project Group, 2004), and enhanced counselling in the primary prevention of Hepatitis C amongst injecting drug users (Abou-Saleh et al, 2008). The participants were also asked to estimate their own health state using a visual analogue 'thermometer' scale (Brooks, 1996).

Group Assignment

The first eligible individual for whom a completed questionnaire was received was randomly allocated to the control group and all subsequent eligible individuals were invited alternately to intervention or control group as the questionnaires were received. Intervention and control group letters were sent out by administration staff.

Intervention, Implementation and Fidelity

The participants who were randomized to the experimental group received the brief intervention. This comprised a one-to-one consultation during which information aimed at promoting behaviour change was provided and was underpinned by self-efficacy (Bandura, 1977) and readiness to change theory (Miller and Rollnick, 2002, Prochaska and Di Clemente, 1984). The intervention was delivered by a registered nurse (MS) who had a post-registration qualification in Occupational Health Nursing and several years of experience in that field. She was a specialist in Occupational Health but not in addictions. In order to prepare for her role in this study, she received training in delivering the intervention from an experienced trainer in the alcohol field, and from the study PI (HW). The training comprised discussion, practical exercises based on case studies, and role play. The intervention was informed by motivational enhancement and incorporated the six elements of the Feedback, Responsibility, Advice, Menu of options, Empathy, Self-efficacy (FRAMES) model (Miller and Rollnick, 2002). HW was on hand during the trial to ensure that intervention fidelity was maintained.

During the delivery of the intervention she used the Drinkaware Unit Calculator and health promotion booklets produced by National Health Service (NHS) Health Scotland to reinforce specific points. These materials were left with the participants. All participants were offered the choice of meeting with the occupational health nurse for delivery of the intervention on either Council premises or at home. Twenty-one chose to meet in the workplace as opposed to five who elected their home as the venue.

Follow-up and outcome measures

All four instruments were administered to participants in both the intervention and control groups at both baseline and also at follow-up 6 months after delivery of the intervention. At Time 1, the AUDIT was administered within the screening process as described previously. At follow-up, the AUDIT was administered as the first part of a telephone interview conducted by the principal investigator (PI), who was blind to the group to which the participants had been assigned. At Time 1, the retrospective

drinking diary for alcohol use was administered to participants in the intervention group as a structured interview by the occupational health nurse who delivered the brief intervention. It was administered by the PI to the control group participants at baseline, and also to both groups at follow-up, as part of the telephone interview, during which the economic and EQ-5D questionnaires were also administered.

Questionnaires and Semi-structured interviews

Quantitative data were collected by means of a questionnaire from individuals who had been selected as potential participants in the screening process only (n=50) and additional qualitative data were collected via telephone interviews from individuals who took part in the screening and exploratory intervention trial (n=46); and Senior Occupational Health Nurse (n=1).

Those who had taken part in the screening only (including non-responders) were asked to gauge their views of the acceptability of the screening process and the provision of information and advice by the LCA's Occupational Health Service on a range of lifestyle issues, including alcohol use. They were also asked if they had objected to or had found any particular questions difficult in the screening questionnaire (a copy of which was sent to remind them of its content). Possible reasons for not taking part in the screening process were also explored in the self-completion questionnaire. Individuals who took part in the intervention were given the opportunity to expand on their questionnaire responses via a post-test follow-up telephone interview with regards their views of their involvement in the study.

The Senior Occupational Health Nurse took part in an interview to elicit her views in relation to screening employees for hazardous drinking and delivering brief interventions.

Statistical analyses

The baseline and follow-up data were entered into an Statistical Package for the Social Sciences (version 16) file by the research assistant. All data were checked by the PI (HW) for accuracy. The main outcome variables (AUDIT, Number of Drinking Days per Week, Maximum Number of Units in One Day, and Total Weekly Consumption) were firstly summarised by group and time using their means and standard deviations. Two factor general linear analysis Analysis of variance (ANOVA) models were then used on each of the four variables to investigate the significance or not of the Group factor, the Time factor and the Group*Time interaction. The assumptions of normality and constant variance were assessed and found to be acceptable. There was some evidence that the constant variance assumption was perhaps suspect for the Total Weekly Consumption variable. The level of significance was set at 5% and all analyses were performed on either SPSS v16 or Minitab v15. The economic analysis of the exploratory trial comprised estimating the costs of delivering the intervention, potential for resource saving and the outcomes of the trial expressed as Quality Adjusted Life Years (QALYs). EQ-5D results were combined with the population values from Kind et al (1999) to give an overall index score of health. Changes between baseline and follow-up were calculated from the 53 participants with completed cases for the economic questionnaires (2 datasets were incomplete). Unit costs from a variety of sources were used to convert service use as derived from the responses to the Service Use Questionnaire to costs. The questionnaire was extensive and not all items were relevant to all participants. All costs were converted to 2006/07 price year, the nearest date to the research.

Ethical clearance

Ethical approval for the study was granted by the Ethics Committee of the University. Permission was sought to conduct the study in a LAC and was granted by the Assistant Chief Executive (Personnel) of the LAC.

RESULTS

Feasibility of Screening and Recruiting Participants for a Workplace Intervention

During the study period a total of 1,514 employees were invited to participate, 627 (41.4%) responded by completing the screening questionnaire of whom 163 (26.01%) fulfilled the inclusion criteria with a total of 57 (35%) agreeing to participate in the trial. Twenty eight employees were randomised to the Intervention group, 2 individuals could not be contacted for the intervention, therefore 26 received the intervention and all were followed up. The control group consisted of 29 employees at baseline and follow up. Figure 1 shows the flow of participants through the course of the trial. The demographic data pertaining to participants at baseline are presented in Table 1. The groups were not significantly different in terms of gender ($\chi^2 = 1.204$, d.f. = 1, $p = 0.272$), occupation category ($\chi^2 = 1.418$, d.f. = 2, $p = 0.492$), or age ($t = 0.066$, d.f. = 52, $p = 0.948$). Information reported by participants at baseline on their alcohol use is shown in Table 2. No statistically significant differences between the groups were found for any of these variables (maximum number of units consumed in one day, $t = 0.381$, $p = 0.705$; number of drinking days/week $t = -1.374$, $p = 0.175$; total weekly consumption, $t = -1.287$, $p = 0.204$; AUDIT $t = -0.210$, $p = 0.835$).

Primary outcomes

The alcohol use means and mean AUDIT scores for both groups at baseline and follow-up are presented in Table 3. A statistically significant effect was found in the mean AUDIT scores over time ($F = 8.96$, $p = 0.004$) but not for group ($F = 0.017$, $p = 0.896$), and no significant interaction was found ($F = 0.148$, $p = 0.702$). No significant effects were found during the analysis of number of drinking days, maximum number of units consumed in one day or total weekly consumptions though two of the group effects and one of time effects approached significance – Table 4 summarises these other results.

Secondary outcomes

EQ-5D and thermometer scales

As may have been expected from a sample of employees, general health was good and a significant number of both the control (18 out of 28) and intervention (16 out of 25) groups had a QALY value of 1 at baseline and all but 4 of these (2 in both groups) also had a value of 1 at the six month follow-up point. Average values of both the calculated QALY score and the thermometer values for the sample indicates few differences between the two groups, both showing a small and insignificant fall in health status whether measured by the EQ-5D questionnaire or the thermometer scale.

Costs of the Intervention

The duration of the intervention ranged between 20 and 45 minutes, the average being 26 minutes. It is likely in practice that an occupational health nurse may need extra time for record keeping etc. However, for this trial the cost is based on the average time of 26 minutes which yields a cost of £12.48 for each intervention delivered at the cost of 0.48 per minute. The differences in service costs was calculated at £344.5 per person; that is there is a net saving of health and other care costs in the intervention group compared to the control. The QALYs fell in both intervention and control but rather less for the intervention group. The difference is $-0.002 - (-0.010)$ yields a net advantage of the intervention of 0.008 QALYs.

Acceptability of the screening and interventions

The majority (92%) of respondents indicated they were happy to have taken part in the health and lifestyle survey which incorporated the AUDIT screening tool and would prefer to receive such a questionnaire at home (60.4%) whilst only 16.7% would have preferred to receive it at work. Seventy percent felt that the LCA's Occupational Health Service should provide advice and information to employees about alcohol use and health. For those who received the intervention, with the exception of 1 participant everyone was very positive about its content and the manner in which it had been carried out. Several participants commented that the intervention had raised their awareness of risks associated with alcohol use and had found the information about calculating the alcohol content of different beverages useful. A small minority indicated that they had concerns that confidentiality may be breached between the occupational health service and managers.

The Occupational Health Nurse was asked to ratify the analysis and confirm that the report represented an accurate account of the interview discussion. It was identified that in routine practice the pre-employment screening had not identified any hazardous or harmful drinkers in the 4.5 years during which the Senior Occupational Health Nurse had provided a service to the local authority council. When asked to consider the implications of introducing alcohol screening and delivery of brief interventions into routine practice within the current service, while acknowledging the potential benefits, she was concerned it would be impractical to employ someone to undertake this as their sole responsibility as she envisaged it to be implemented on an intermittent basis. She also felt that employees may be reluctant to take part in screening and any appropriate intervention if it were delivered by Occupational Health Service for reasons of confidentiality.

DISCUSSION

The main results from the trial suggest that brief interventions in the workplace have the potential to reduce alcohol related harm and also save public sector resources. The analysis of the pre- and post-test data showed that the employees in the intervention group reported greater reductions than those

in the control group in terms of the mean maximum number of units consumed in one 24-hour period, the number of drinking days per week, and the mean number of units consumed in one week. Furthermore, the employees in the intervention group at follow-up reported fewer days use of hospital services and primary care than at baseline. This contrasted with the control group whose post-test use rose. None of these changes reached levels of statistical significance although interesting trends were evident, but the aim of the study was not to show the effectiveness of a brief intervention on alcohol use or health status. Rather, the aim was to provide data on which to calculate the sample size required for a randomised controlled study and to determine the feasibility of conducting such an investigation. The key challenges faced are discussed and explored here.

Recruitment challenges

At 10.08%, the rate at which hazardous drinkers were identified for recruitment to the exploratory trial was very similar to the 9.4% rate suggested by Aalto et al (1999), whose sample was recruited at an occupational health clinic in Finland. However, the recruitment strategy reported here for this study resulted in a slow and prolonged recruitment period. Low consent and participation rates have also been described elsewhere in similar studies (Cook et al 1996; Lapham et al 2003, Matano et al 2007). It is highly possible that employees felt apprehensive about discussing their alcohol consumption behaviours for fear of some form of reprisal from their employers, despite assurances of confidentiality as part of participants in a research study. This is supported by a small minority who indicated, in response to an open question, that they had concerns that confidentiality may be breached between the occupational health service and managers. Despite this possible explanation, the majority of employees (69.8%) who took part in the survey of the acceptability of the screening and brief intervention felt that the Council's occupational health service ought to provide advice and information to employees about alcohol use and health (Watson et al, 2009). In fact, Heirich & Slieck (2000) had, as a result of changes to their study design, employees requesting health screening and

counselling when they realised they had not been selected for participation. The challenge of recruitment however, remains an important issue that needs to be addressed further if such an intervention were to be implemented widely.

Treatment fidelity implications and Intervention agent

Nurses have been identified as a readily available workforce (Owens et al, 2000) but one that is often under-utilised in relation to the delivery of alcohol prevention in an Occupational Health Setting (Nilsen et al, 2011). However, it is also acknowledged that non-specialist nurses feel they lack role legitimacy and clinical confidence in responding to those suffering from alcohol related harm (Holloway & Webster, 2013, Holloway et al, 2013). The need for adequate alcohol education and training for nurses has been identified not only within the UK but also internationally (Holloway & Webster 2013). It is argued that such education and training would provide nurses with the clinical confidence and clinical skills to engage in the delivery of alcohol brief interventions (Holloway et al 2013). In this particular study the intervention was delivered in a single site study by a researcher who was an Occupational Health Nurse by background and who had undergone rigorous training in brief intervention delivery. The most common areas for the delivery of alcohol brief interventions by nurses have to date been in primary care, where the evidence for effectiveness and efficacy are strongest. Even so, even in such settings, nurses have voiced perceived barriers to this role (Lock et al, 2002).

In a work place setting there are clearly perceived concerns for both the nurse delivering the intervention, as identified in this study, and the employee receiving the intervention, in terms of perceived confidentiality and implications of divulging an alcohol-related problem. The challenge for future studies in this field would focus on ensuring intervention integrity and delivery across multiple sites by company Occupational Health Nurses (Roman & Blum, 1996; Webb et al, 2009). Despite these challenges there are examples of large scale implementation of alcohol interventions within the

workplace. The European Workplace and Alcohol (EWA) project is one that addressed funding and utility within an international setting. The project was co-financed by the European Commission, running from 2011-2013. A range of key stakeholders including private/public sector, public sector and governmental organisations and trade unions worked in partnership to raise awareness of alcohol consumption in the workplace with a focus on achieving individual and organisational change to achieve safer levels. The project included twelve European implementation countries and culminated in the development of a toolkit and policy recommendations (EWA, 2013). Collaborative working is clearly a key lever in the funding and potential utility of such interventions.

Target Group

The AUDIT appears to have performed well as a screening tool in this study in that a similar proportion of hazardous drinkers were identified as in other published studies where it has been used in a similar setting (Hermansson et al, 2003, Webb et al, 2009). However, in this study, we only targeted hazardous drinkers. In hindsight it would also have been appropriate to include harmful drinkers. It appears from the literature that periodic health checks are routinely conducted in the workplace in Scandinavian countries (Aalto et al, 1999, Hermansson et al, 2003), more commonly than in this country. Such activities could provide an opportunity for screening and the delivery of interventions for hazardous and harmful levels and patterns of alcohol consumption. The introduction of a broad-based approach maybe further advocated, as seen in previous studies (Lapham et al, 2003; Richmond et al, 2000; Walters & Woodall, 2003) and supported (Roman & Blum, 1996). It could be that, were a screening process to be introduced as a routine, uptake would be higher than for a research project being undertaken by a university, as was the case in this study. Alcohol screening itself has also been associated with a reduction in levels of alcohol consumption (McCambridge & Day, 2008) along with regression to the mean. Adding further strength to the argument for its routine introduction.

Conclusion

This pilot and feasibility study provided data on which to calculate the sample size required for a fully powered RCT. There were positive results from the study and despite its limitations, the identified impact of alcohol consumption on economic efficiency and productivity within the workplace on an international scale (Anderson, 2010; Australian Institute of Health & Welfare, 2010, Rehm et al 2006) would suggest that conducting a fully powered study of the potential benefits of delivering a brief intervention for harmful and hazardous alcohol use within the working population is justified.

In a full trial an alternative recruitment strategy and target group would be considered, perhaps this could be addressed by using an online approach. A multi-centred setting could be utilised which would see the intervention being delivered by more than one Occupational Health Nurse. This would require the treatment delivery and integrity to be rigorously addressed. A fully powered study is warranted to address some of the key challenges identified and contribute to the future evidence base.

Acknowledgements

The authors first and foremost wish to thank the LCA employees who took part in the study, the Principal Safety Officer and Senior Occupational Health Nurse for their help and support, and the Research Advisory Group for giving their time and expertise.

Conflict of interest

None declared.

Funding

Acknowledgement is also due to Alcohol Research UK (formerly Alcohol Education and Research Council for funding the study. ARUK monitored the progress of the study and reviewed the final report submitted by the study team.

REFERENCES

- Aalto, M., Seppa, K., Kiianmaa, K., Sillanaukee, P., 1999. Drinking habits and prevalence of heavy drinking among primary health care outpatients and general population. *Addiction*. 94(9), 1371-9.
- Abou-Saleh, M., Davis, P., Rice, P., Checinski, K., Drummond, C., Maxwell, D., Godfrey, C., John, C., Corrin, B., Tibbs, C., Oyefeso, A., de Ruiter, M., Ghodse, H., 2008. The effectiveness of behavioural interventions in the primary prevention of Hepatitis C amongst injecting drug users: a randomised controlled trial and lessons learned. *Harm Reduction Journal* 5, 25, doi. 10.1186/1477-7517-5-25.

Alcohol Concern., 2001. Impact of alcohol and drug problems on the workplace: glancesheet. No. 2. Alcohol Concern/DrugScope. London.

Alcohol Concern., 2006. Impact of alcohol problems on the workplace. Acquire: Alcohol Concern's Quarterly Information and Research Bulletin, Winter. Alcohol Concern, London.

Anderson, P., 2010. Alcohol and the workplace. A report on the impact of work place policies and programmes to reduce the harm done by alcohol to the economy. Focus on Alcohol Safe Environment (FASE) project.

Australian Institute of Health & Welfare., 2011. Drugs in Australia 2010: tobacco, alcohol and other drugs. Drug statistics series. Cat. no. PHE 154. AIHW , Canberra.

Babor, T.F., Higgins-Biddle, J.C., Saunders, J.B., Montiero, M.G., 2001. AUDIT: The Alcohol use Disorders Identification Test, 2nd Edition. World Health Organization, Department of Mental Health and Substance Dependence. WHO, Geneva.

Bandura A., 1977. Social learning theory. Englewood Cliffs, Prentice Hall, N.J.

Bayley, M., Annand, F., Stone, K., Herring, R., Thom, B., 2011. A feasibility study into delivering IBA within the workplace settings. Final Evaluation Report. Middlesex University

Black C., 2008. Working for a Healthier Tomorrow: London: TSO.
<http://www.workingforhealth.gov.uk/documents/working-for-a-healthier-tomorrowtaggedpdf>
accessed 09/12/2013

British Medical Association (BMA) Occupational Medicine Committee., 2014. Alcohol, drugs and the workplace. The role of medical professionals. BMA

Brooks R., 1996. Euroqol: the current state of play. Health Policy, 37, 53-72.

Cabinet Office Report., 2004. Alcohol Harm Reduction Strategy for England. Strategy Unit, London.

Collins, D.J., Lapsley, H.M., 2008. *The cost of tobacco, alcohol and illicit drug abuse to Australian society in 2004/05*. Monograph Series No 64. Canberra: Department of Health & Ageing.

Cook, R.F., Back, A.S., Trudeau, J. 1996. Preventing alcohol use problems among blue-collar workers: a field test of the Working People program. Substance Use Abuse, 31, 255-275.

Department of Health., 2004. Choosing Health: Making Healthy Choices Easier.
http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4094550&chk=aN5Cor
accessed 09/12/213 ARCHIVED

Drummond, C., James, D., Coulton, S., Parrot, S., Baxter, J., Ford, J., Godfrey, C., Lervy, B., Peters, T., Russell, I., Williams, J., 2003. The Effectiveness and Cost-effectiveness of Screening and Stepped-care Intervention for Alcohol Use Disorders in the Primary Care Setting (STEPWICE Project). Final report to the Wales Office for Research and Development (London, St. Georges' Hospital Medical School).

European Workplace and Alcohol. 2013. Financial technical report. Government of Catalonia.

Godfrey, C., 1997. Lost productivity and costs to society, Addiction 92, S49-S54.

Harwood, H., 2000. Updating estimates of economic costs of alcohol abuse in the United States: estimates, update methods, and data. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.

Health Development Agency., 2004. Workplace interventions: alcohol and diet. http://www.hda.nhs.uk/downloads/pdfs/choosing_health/CHB19-alcohol_diet-14-7.pdf accessed 09/12/2013.

Heirich, M., Sieck.C.J. 2000. Worksite cardiovascular wellness programs as a route to substance abuse prevention. *Journal of Occupational Environmental Medicine*, 42, 47-56

Hermansson, U., Knutsson, A., Brandt, L., Huss, A., Rönnerberg, S., Helander, A., 2003. Screening for high-risk and elevated alcohol consumption in day and shift workers by use of the AUDIT and CDT. *Occupational Medicine* 53, 518–526.

Hermansson, U., Helander, A., Brandt, L., Huss, A., Rönnerberg, S., 2010. Screening and brief intervention for risky alcohol consumption in the workplace: results of a 1 year randomised controlled study. *Alcohol and alcoholism* 45 (3), 252-257.

Holloway, A., Blackman, I., Flynn, F 2013. A study examining the appropriateness of a self-rated alcohol-related clinical confidence tool as a method of measurement among registered hospital nurses using Rasch analysis. *Journal of Advanced Nursing*.00(0), 000-000.doi:10.1111/jan. 12264.

Holloway, A.S. & Webster B.J., 2013. Alcohol education and training in pre-registration nursing: A national survey to determine curriculum content in the United Kingdom (UK). *Nurse Education Today*, 33, 992-997.

Institute of Alcohol Studies., 2013. Alcohol in the Workplace Factsheet. <http://www.ias.org> accessed 09/12/2013

Kaner, E.F., Dickinson, H.O., Beyer, F.R., Campbell, F., Schlesinger, C., Heather, N., Saunders, J.B., Burnand, B., Pienaar, E.D., 2007. Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Review* 2. Art. No.: CD004148. DOI: 10.1002/14651858.CD004148.pub3.

Kaner E, F., Bland, M., Cassidy, P., Coulton, S., Deluca, P., Drummond, C., Gilvarry, E., Godfrey, C., Heather, N., Myles, J., Newbury-Birch, D., Oyefeso, A., Parrott, S., Perryman, K., Phillips, T., Shenker, D., Shepherd, J., 2009. Screening and brief interventions for hazardous and harmful alcohol use in primary care: a cluster randomised controlled trial protocol. *BMC Public Health* 9 (287) doi:10.1186/1471-2458-9-287

Kind, P., Hardman, G., Macran, S., 1999. UK population norms for EQ-5D. Discussion Paper 172. Centre for Health Economics, University of York: York.

Koepe, A., 2010. Good practice of Alcohol Prevention at the workplace – results of the EU Project FASE. AER Conference Barcelona, Spain 11 May.

Lapham, S.C., Gregory, C., McMillan, G. 2003. Impact of an alcohol misuse intervention for health care workers – 1.Frequency of binge drinking and desire to reduce alcohol use. *Alcohol Alcohol*, 38, 176-182.

Lock, C.A., Kaner, E., Lamont, S. Bond, S. 2002 A qualitative study of nurses' attitudes and practices regarding brief alcohol intervention in primary health care. *Journal of Advanced Nursing*, 39, 333-342

- Ludbrook, A., Godfrey, C., Wyness, L. 2002. Effective and cost effective measures to reduce alcohol misuse in Scotland: a literature review. Scottish Executive. Edinburgh.
- Matano, R. A., Kloopman, C., Wanat, S. E., Winzelberg, A.J., Whitsell, S.D., Westrup, D et al. 2007. Journal of Substance Abuse Treatment, 32, 71-80
- Marmot, M., 2010 Fair society healthy lives. The Marmot Review. London.
- McCambridge, J. Day, M. 2008. Randomized controlled trial of the effects of completing the Alcohol Use Disorders Identification Test questionnaire on self-reported hazardous drinking. Addiction, 103, 241-248.
- Miller, W.R., Rollnick, S., 2002. Motivational interviewing: preparing people for change. 2nd ed. London: Guilford Press.
- Moyer A, Finney J W, Swearingen C E, and Vergun P. 2002. Brief interventions for alcohol problems: a meta-analytic review of controlled investigations in treatment-seeking and non-treatment-seeking populations. Addiction 97 (3), 279-292.
- National Institute for Health and Clinical Excellence., 2008. Guide to the methods of technology appraisal. NICE: London.
- Nicholson, P.J., 2002. Occupational health in the European Union. Occupational Medicine 52 (2), 80-84.
- Nilsen, P., Holmqvist, M.,Hermansson, U. 2011. Alcohol prevention in Swedish occupational health care. Occupational Medicine, 61, 472-479
- Office for National Statistics. 2006. Page 12, General Household Survey, 2006, Appendix A, Definitions and Terms.
http://www.statistics.gov.uk/downloads/theme_compendia/GHS06/AppendixA2006.pdf accessed 09/12/2013
- Office for National Statistics., 2010. General Lifestyle Survey Overview: A report on the 2010 General Lifestyle Survey. London.
- Owens, L., Gilmore, I.T., Pirmohamed, M., 2000. General Practice Nurses' Knowledge of Alcohol Use and Misuse: A questionnaire survey. Alcohol and Alcoholism, 35 (3), 259-262.
- Pilkington, A., Graham, M.K., Cowie, H.A., Mulholland, R.E., Dempsey, S., Melrose, A.S., Hutchinson, P.A., 2002. Survey of Use of Occupational Health Support. Norwich:Crown.
- Prochaska, J.O., DiClemente, C.C., 1984. The transtheoretical approach: Crossing traditional boundaries. Ch.3. Dow Jones-Irwin, Illinois.
- Rehm, J., Patra, J., Popova, S. 2006. Alcohol-attributable mortality and potential years of life lost in Canada 2001: implications for prevention and policy. Addiction, 101: 373–384. doi: 10.1111/j.1360-0443.2005.01338.x
- Richmond, R., Kehoe, L., Heather, N., Wodak, A., 2000. Evaluation of a Workplace Brief Intervention for Excessive Alcohol Consumption: The Workscreen Project. Preventive Medicine 30, 51–63.
- Robin, R., de Charro, F., 2001. EQ-5D: a measure of health status from the EuroQol Group. Ann Med 33, 337-343.

Roman, P.M., Blum, T.C., 1996. Alcohol: a review of the impact of worksite interventions on health and behavioural outcomes. *American Journal of Health Promotion*, 11, 135-149.

Roman, P.M., Blum, T.C., 2002. The workplace and alcohol problem prevention. *Alcohol Research Health*. 26 (1), 49-57.

Science Group of the Alcohol and Health Forum (2011) Alcohol, Work and Productivity: Scientific Opinion of the Science Group of the European Alcohol and Health Forum. Eurocare. European Alcohol Policy Alliance.

Scottish Executive, 2003. Improving Scotland's Health: the Challenge. The Stationery Office, Edinburgh.

Scottish Government, 2008. Changing Scotland's relationship with alcohol: a discussion paper on our strategic approach. <http://www.scotland.gov.uk/Publications/2008/06/16084348/0> accessed 09/12/2013.

Scottish Government Social Research, 2010. The Societal Cost of Alcohol Misuse in Scotland for 2007. Scottish Government. Edinburgh

Thavorncharoensap, M., Teerawattananon. Y., Yothasamut. J., Lertpitakpong, C., Thitiboonsuwan, K., Neramitpitagkul, P., Chaikledkaew, U., 2010. The economic costs of alcohol consumption in Thailand 2006, *BMC Public Health* 10, 323 doi:10.1186/1471-2458-10-323

Varney, S.J., Guest, J.F., 2002. The annual societal cost of alcohol misuse in Scotland. *Pharmacoeconomics* 20 (13), 891-907.

Walters, S.T., Woodall, W. 2003. Mailed feedback reduces consumption among moderate drinkers who are employed. *Preventative Science*, 4, 287-294.

UKATT Research Team., 2005. Cost-effectiveness of treatment for alcohol problems: findings from the UK Alcohol Treatment Trial, *British Medical Journal* 331(7516), 544-547.

UKCBTMM Project Group., 2004. The effectiveness and cost effectiveness of cognitive behaviour therapy for opiate misusers in methadone maintenance treatment: a multicentre, randomised, controlled trial. Final Report to the R&D Directorate of the Department of Health as part of the Drug Misuse Research Initiative, November.

VicHealth., 2012. Reducing alcohol-related harm in the workplace (An evidence review: summary report). Victorian Health Promotion Foundation, Melbourne, Australia.

Watson, H.E., Godfrey, C., McFadyen, A., McArthur, K. Stevenson, M. 2009. Reducing alcohol-related harm in the workplace: a feasibility study of screening and brief interventions for hazardous drinkers. AERC

Webb, G., Shakeshaft, A., Sanson-Fisher, R., Havard, A., 2009. A systematic review of work-place interventions for alcohol-related problems. *Addiction* 104, 365-377

World Health Organization. 2006 http://www.who.int/occupational_health/Declarwh. Pdf accessed 09/12/2013

World Health Organization. 2014. Global status report on alcohol and health. WHO. Geneva.

